REMARKS

This is in response to the Office Action mailed on June 2, 2005, in which all pending claims 1, 2, 4-15, 17 and 18 were rejected. Specifically, claims 1, 4-8, 12-15, 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Pub. No. 2003/0129274 to Garwood, in view of Lyons, U.S. Patent No. 5,530,255, claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Garwood and Lyons in view of McKeown, U.S. Patent No. 5,847,401, and claims 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Garwood, Lyons, McKeown, and in further view of Kanter, U.S. Patent No. 4,757,201.

Cancellation of Claims

With this Amendment, claims 1, 2, 4, 5, 7, 8, 13 and 15 are canceled without prejudice, thereby rendering moot their rejection.

Claim 6

Independent claim 6, as amended, recites a bulk material irradiation system that includes a plurality of bulk material tubes each offset from adjacent tubes in an alternating patters, and an irradiation assembly providing ionizing radiation that penetrates a full thickness of the bulk material in the plurality of offset bulk material tubes to irradiate the bulk material passing adjacent to the irradiation assembly in the bulk material tubes.

The Examiner has rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Garwood in view of Lyons, specifically pointing to FIG. 19 and paragraph [0153] of Garwood which discloses a plurality of tubes (5744, 5746 and 5748) joined at a confluence (5750) to a single tube (5754). Each of the plurality of tubes contains a stream of grinds that have a different fat content, so that a combined stream of grinds having a precisely controlled fat content can be formed from a combination of the streams.

Garwood does not disclose, teach or suggest providing ionizing radiation to a plurality of bulk material tubes as recited in amended claim 6. In paragraph [0152], Garwood teaches that "the conditioned ground beef may be exposed to a suitable beam of electrons by locating an electron beam

generator and accelerator such as may be manufactured by Titan-Scan Systems of 3033 Science Park Road, San Diego, Calif. 92121. The electron beam generator may be located in such a manner that the suitable beam of electrons produced there with, is directed directly at and through a stream of grids while the grinds are passing through a tube such as tube 5754 shown in FIG. 19." This disclosure teaches that in the area of the system where ionizing radiation is applied, Garwood teaches only a single bulk material tube, rather than a plurality of offset tubes as recited in claim 6. By contrast, the offset pattern of multiple bulk material tubes of the present invention is employed specifically for the purpose of controlling exposure of bulk material in the tubes to ionizing radiation. A explained at page 35, lines 18-22, "Tubes 16a-16d are configured in an offset arrangement 210 to recover a portion of the irradiation beam power from upper electron beam 180 and lower electron beam 182 that completely penetrates through the thinner cross sections at the edges of the tubes. With this configuration, the total beam scan distance may be reduced and wasted beam power will be minimized."

Amended claim 6 recites that ionizing radiation penetrates a full thickness of the bulk material in the plurality of offset bulk material tubes. Garwood (in combination with Lyons) does not disclose, teach or suggest providing ionizing radiation to a plurality of offset bulk material tubes. In order to reject a claim as being obvious under 35 U.S.C. § 103, the cited references when combined must disclose all of the elements of the claim. See M.P.E.P. 2143. Because the combination of Garwood and Lyons fails to disclose, teach or suggest the provision of ionizing radiation to a plurality of offset bulk material tubes, the rejection of amended claim 6 should be withdrawn.

Claims 9-11

Independent claim 9 recites a bulk material irradiation system that includes a dosimetry carrier entry port in the bulk material tube upstream from the irradiation assembly and a dosimetry carrier exit port in the bulk material tube downstream from the irradiation assembly.

The Examiner has pointed to Kanter as disclosing a dosimetry carrier for monitoring the irradiation of bulk material. In response to this rejection, the Applicants pointed out that Kanter fails to

disclose, teach or suggest a dosimetry carrier entry port upstream from an irradiation assembly and a dosimetry carrier exit port downstream from an irradiation assembly, as recited in claim 9, Instead, the dosimetry carriers of Kanter appear to simply be added in with the bulk material and removed from the bulk material at the output of the system.

The Examiner now states that "It is implied herein, that the use of plural entry and exit ports (for example 1322, 1608, and 1622, See paragraph's [0122], [0128], and [0128]) in accordance with Garwood (274) is equivalent to having dosimetry carrier entry and exit ports, as recited in claims 9-11."

The "plural entry and exit ports" disclosed by Garwood are explained as follows:

- [0122] "Alternatively, a suitably concentrated solution of carbonic acid can be injected into the grinding head 1300 at port 1322, or mixed with the meat portions immediately prior to grinding such that it becomes mixed with the meat in the grinding process."
- [0127] "...A port 1608 is provided in a section of the meat grinder 1604 to allow injection of gases such as carbon dioxide or blends of carbon dioxide, nitrogen or any other suitable gas. Injection of the gases into port 1608 substantially purges air that is in contact with the meat just prior to grinding and displaces the air with the desired gas."
- [0128] "A port 1622 is provided at the apex of removable dome 1610 providing a port to inject gases and other substances such as O_3, F_2, H_2O_2, $KMnO_4$, HClO, ClO_2, O_2, Br_2, I_2, or any combination thereof and flavors into or alternatively extract from within the pressure vessel through port 1622. Alternatively, a gas blend is injected into the pressure vessel through port 1622 and maintained at a pressure of about 25 psi. A gas blend including nitrogen and/or carbon dioxide and/or ozone (O_3) will be provided into pressure vessel via port 1622. Water and

oils in the ground meat can then absorb carbon dioxide until it becomes substantially saturated and cannot absorb any additional carbon dioxide."

These disclosures of Garwood all teach one skilled in the art how (and why) to inject gases into a bulk material tube. There is no disclosure, teaching or suggestion that would motivate one skilled in the art to insert a dosimetry carrier into the bulk material tube through a port such as is disclosed by Garwood. Moreover, even if a dosimetry carrier (such as the one taught by Kanter) were to be inserted through a port of the Garwood system into a bulk material tube (despite the lack of a suggestion to do so), there is still no teaching of an exit port downstream from an irradiation assembly from which the dosimetry carrier could be extracted.

The Applicants are not claiming to have invented the first bulk material tube that has holes in it. However, the Applicants do claim to be the first to provide a system that includes a port for insertion of a dosimetry carrier upstream from an irradiation assembly and a port for extraction of a dosimetry carrier downstream from the irradiation assembly, so that the dose of radiation received by the bulk material passing through the system can be accurately monitored.

Three basic requirements are necessary to establish a prima facie case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. Furthermore, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. See M.P.E.P. 2143.

In this case, there is no suggestion or motivation in the references or elsewhere in the art to combine their teachings in the manner claimed. Garwood does not suggest any use of a dosimeter; ports are provided only for injection of gases into a stream of ground beef. Kanter teaches a dosimeter, but does not suggest how, or any reason why it may be useful, to provide a port for inserting and extracting the

dosimeter from the a bulk material tube. Neither reference would suggest to one skilled in the art that a port as taught by Garwood could be provided for insertion and extraction of a dosimeter as taught by Kanter. Because the requisite suggestion or motivation to combine the teachings of Garwood and Kanter in the manner claimed is lacking, the rejection of claim 9 under 35 U.S.C. § 103(a) should be withdrawn.

Furthermore, even if the teachings of Garwood and Kanter are combined, the combination fails to teach or suggest the claimed subject matter. The combination of these two references would yield a system in which a dosimeter is placed in bulk material at a main entry and extracted from the bulk material at a main exit, with a port included in the bulk material carrier that allows gas to be injected into the bulk material. The port disclosed by Garwood is not suitable for insertion of a dosimeter, and there is no suggestion in Garwood or elsewhere in the art to modify the port to insert a dosimeter. Thus, the combination of Garwood and Kanter fails to teach or suggest the dosimeter entry and exit ports recited in claim 9, and the rejection of claim 9 under 35 U.S.C. § 103(a) should accordingly be withdrawn.

Claim 12

Independent claim 12 recites a bulk material irradiation system that includes a bulk material tube that "is elliptical in shape and has a wall with a thickness that is thicker around edge portions of the bulk material tube than around a central portion of the bulk material tube."

In rejecting this claim, the Examiner contended that "The use of shaped conduits mounted on the flange 7520 to provide a different profile and size of extruded streams of grinds pumped there through, which implies the use of an elliptically shaped bulk material tube, as recited in claims 12 and 14. See paragraph [0243]; and Figure 1...."

This rejection ignores explicit language of claim 12, reciting that the bulk material tube is elliptical **and has a wall with a thickness that is thicker around edge portions of the bulk material tube than around a central portion of the bulk material tube**. The bulk material tube shape and wall configuration of claim 12 are disclosed in the specification with respect to FIGS. 21-23 at page 38, line 12 – page 41, line 16. There is no disclosure, teaching or suggestion in Garwood or elsewhere in the art

to configure the wall of the tube in this way. The rejection of claim 12 under 35 U.S.C. § 103(a) should accordingly be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of the recited shape and configuration of the bulk material tube wall be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Claim 14

Independent claim 14 recites a bulk materia irradiation system that includes a bulk material tube having an outer wall that is rectangular in shape and an inner wall that is elliptical in shape, a region between the outer wall and the inner wall including a liquid with an irradiation absorption characteristic that approximately matches an irradiation absorption characteristic of the bulk material in the bulk material tube.

In rejecting this claim, the Examiner contended that "The use of shaped conduits mounted on the flange 7520 to provide a different profile and size of extruded streams of grinds pumped there through, which implies the use of an elliptically shaped bulk material tube, as recited in claims 12 and 14. See paragraph [0243]; and Figure 1...."

This rejection ignores explicit language of claim 14, reciting that the bulk material tube **has an outer wall that is rectangular in shape and an inner wall that is elliptical in shape, a region between the outer wall and the inner wall including a liquid with an irradiation absorption characteristic that approximately matches an irradiation absorption characteristic of the bulk material in the bulk material tube**. The bulk material tube shape, configuration and liquid characteristics of claim 14 are disclosed in the specification with respect to FIG. 22 at page 39, line 18 – page 40, line 17. There is no disclosure, teaching or suggestion in Garwood or elsewhere in the art to configure the walls of the tube and include a specific liquid between walls of the tube in this way. The rejection of claim 14 under 35 U.S.C. § 103(a) should accordingly be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of the recited shape and configuration of the bulk material tube wall be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Claims 17 and 18

Independent claim 17 recites a fresh ground meat irradiation system that includes a velocity measurement system for determining an actual rate of ground meat movement through the conduit and adjusting an irradiation dose provided by the irradiation assembly based on the determined rate.

In rejecting this claim, the Examiner pointed to paragraph [0153] and FIG. 17 of Garwood, which discloses that the velocity of different streams of ground beef can be adjusted in order to adjust the fat content of ground beef in a combined stream. There is no disclosure, teaching or suggestion in Garwood to adjust an irradiation dose provided to ground meat based on the measured velocity – Garwood's discussion of velocity control deals only with controlling the fat content in the ground beef. The rejection of claim 17 under 35 U.S.C. § 103(a) should accordingly be withdrawn. Should the Examiner disagree with this conclusion, it is respectfully requested that any teaching of adjustment of the irradiation dose provided to ground meat based on measured velocity be specifically pointed out in accordance with 37 C.F.R. 1.104(c)(2).

Claim 18 depends from independent claim 17, and is allowable therewith.

CONCLUSION

In view of the foregoing, all pending claims 6, 9-12, 14, 17 and 18 are in condition for allowance. A notice to that effect is respectfully requested.

The Examiner is cordially invited to contact the undersigned at the telephone number listed below if such a call would in any way facilitate the allowance of this application.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date: 8/25/05

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